0.280 = Molecular weight of N_2 or CO, divided by 100.

0.320 = Molecular weight of O_2 divided by 100.

0.440 = Molecular weight of CO_2 divided by 100.

12.2 Nitrogen, Carbon Monoxide Concentration. Determine the percentage of the gas that is N_2 and CO by subtracting the sum of the percent CO_2 and percent O_2 from 100 percent.

12.3 Dry Molecular Weight. Use Equation 3–1 to calculate the dry molecular weight of the stack gas.

$$M_d = 0.440\left(\%CO_2\right) + 0.320\left(\%O_2\right) + 0.280\left(\%N_2 + \%CO\right) \qquad \text{Eq. 3-1}$$

NOTE: The above Equation 3–1 does not consider the effect on calculated dry molecular weight of argon in the effluent gas. The concentration of argon, with a molecular weight of 39.9, in ambient air is about 0.9 percent. A negative error of approximately 0.4 percent is introduced. The tester may choose to include argon in the analysis using procedures subject to approval of the Administrator.

13.0   *Method Performance [Reserved]*

14.0   *Pollution Prevention [Reserved]*

15.0   *Waste Management [Reserved]*

16.0   *References*

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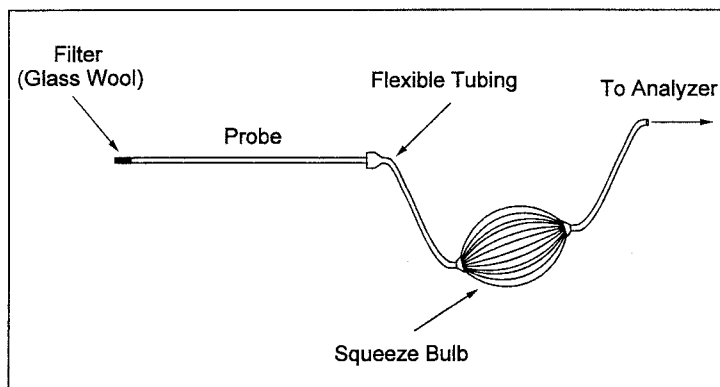17.0   *Tables, Diagrams, Flowcharts, and Validation Data*
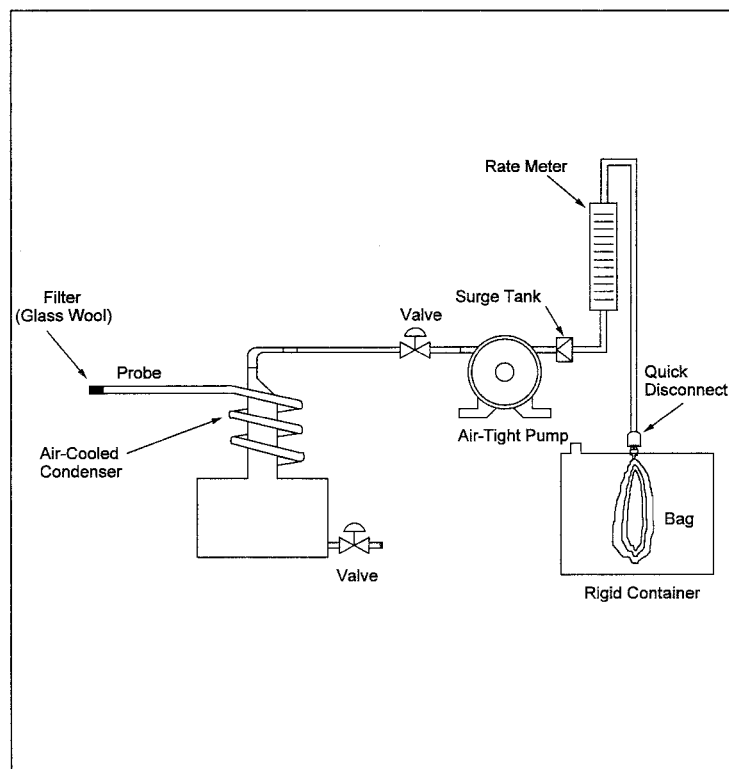

Figure 3-1.   Grab-Sampling Train.

Figure 3-2.   Integrated Gas-Sampling Train.

Time	Traverse point	Q (liter/min)	% Deviation[a]
Average			

[a] % Dev.=[(Q − Q$_{avg}$)/Q$_{avg}$]×100 (Must be ≤±10%)

Figure 3–3. Sampling Rate Data

METHOD 3A—DETERMINATION OF OXYGEN AND CARBON DIOXIDE CONCENTRATIONS IN EMISSIONS FROM STATIONARY SOURCES (INSTRUMENTAL ANALYZER PROCEDURE)

1. *Applicability and Principle*

1.1 Applicability. This method is applicable to the determination of oxygen (O_2) and carbon dioxide (CO_2) concentrations in emissions from stationary sources only when specified within the regulations.

1.2 Principle. A sample is continuously extracted from the effluent stream: a portion of the sample stream is conveyed to an instrumental analyzer(s) for determination of O_2 and CO_2 concentration(s). Performance specifications and test procedures are provided to ensure reliable data.

2. *Range and Sensitivity*